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JAMES M. STOVER
NCR CORPORATION
1700 SOUTH PATTERSON BLVD, WHQ4
DAYTON, OH 45479

EXAMINER

FLEURANTIN, JEAN B

| ART UNIT | PAPER NUMBER |
|----------|--------------|
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2172

DATE MAILED: 01/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

File

| | | | |
|------------------------------|--------------------------------------|-----------------------------------|--|
| Office Action Summary | Application No. 09/900,280 | Applicant(s) LUO ET AL. | |
| | Examiner Jean B Fleurant | Art Unit 2172 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,7,8,13-19 and 24-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 4,7,8,16-19,33 and 43-50 is/are allowed.
- 6) ☐ Claim(s) 1-3,13-15,24-32 and 34-40 is/are rejected.
- 7) ☒ Claim(s) 41 and 42 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>6</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Claims 24-50 are added.

Claims 1-4, 7, 8, 13-19 and 24-50 remain pending for examination. Examiner discusses the limitations of newly added claims 24-50 in the following rejection.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on November 26, 2003 (Paper No. 6) complies with the provision of MPEP 609. It has been placed in the application file. The information referred to therein has been considered as to merits. (See attached form).

Response to Applicant's Remarks

3. Applicant's arguments, see page 12, filed November 03, 2003, with respect to claims 1 and 13 have been fully considered but, have been found persuasive only to the extent that the prior art of record does not specifically teach the limitations "the auxiliary relation partitioned across the plural nodes according to a join attribute" However, Colby teaches such limitations.

Interpretation of Claims-Broadest Reasonable Interpretation, see MPEP 2111. During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the

Art Unit: 2172

claim, once issued, will be interpreted more broadly than is justified. In re Prater, 162 USPQ 541,550-51 (CCPA 1969).

Therefore, the rejection in last Office Action maintains.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3, 13-15, 24-32 and 34-40 rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,484,159 issued to Mumick et al. ("hereinafter "Mumick") in view of Colby et al., Supporting Multiple View Maintenance Policies, 1997 – submitted by the Applicant(s) ("hereinafter Colby").

As per claim 1, Mumick discloses storing a materialized join view based on at least two base relations (thus, materialized views 120 includes one or more materialized views 122A-Z, each of which is the result of a query that has been performed, each view is a compilation of information similar in structure to a table, a view that has been stored is usable like a table, see col. 3, lines 29-33);

storing at least one auxiliary relation containing one or more attributes of one of the base relations (thus, database 112 includes one or more tables 114A-Z which are compilations of

Art Unit: 2172

information, generally tables are conceptualized as being organized in rows and columns although the storage format may be different, materialized views 120 includes one or more materialized views 122A-Z, each of which is the result of a query that has been performed, each view is a compilation of information similar in structure to a table, a view that has been stored is usable like a table, see col. 3, lines 20-33);

updating the at least one auxiliary relation in response to modification of the base relation (thus, propagation of the change table is particularly efficient when the change table depends only on the changes to the base relation, see col. 10, lines 42-44). Mumick does not explicitly disclose the auxiliary relation partitioned across the plural nodes according to a join attribute. However, Colby discloses the set of all viewgroups forms a partition over the set of nodes in view dependency graph, (see figure 1, page 408, col. 2, lines 25-30). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mumick with Colby the auxiliary relation partitioned across the plural nodes according to a join attribute. Such modification would allow the teachings of Mumick and Colby to improve the reliability of the auxiliary relation for materialized view, and to provide a viable and scalable system for supporting multiple views and policies, (see page 415, col. 2, lines 56-60).

As per claim 2, Mumick discloses the method as claimed, further comprises storing the base relation that is not partitioned according to the join attribute, (see col. 3, lines 20-33).

Art Unit: 2172

As per claims 3 and 14, in addition to the discussion in claim 1, Mumick further discloses receiving a tuple into the database system (thus, the materialized view is further updated by inserting a tuple from the change table into the materialized view, see col. 2, lines 32-33);

using the auxiliary relation to determine whether to update the materialized join view (thus, the materialized view is updated by applying the higher level change table to the materialized view using a refresh operation, see col. 1, lines 49-53).

As per claim 13, in addition to claim 1, Mumick further discloses a controller adapter to update the join view using the at least one auxiliary relation (thus, propagation of the change table is particularly efficient when the change table depends only on the changes to the base relation, see col. 10, lines 42-44).

As per claim 15, Mumick discloses, wherein the controller is further adapted to not update the join view after receiving some tuples, (see col. 3, lines 20-33).

As per claim 24, the limitations of claim 24 are rejected in the analysis of claim 1, and this claim is rejected on that basis.

As per claim 25, the limitations of claim 25 are rejected in the analysis of claim 1, and this claim is rejected on that basis.

Art Unit: 2172

As per claim 26, in addition to claim 1, Mumick further discloses inserting the first tuple into the first base relation, (see col. 9, lines 18-20).

As per claim 27, in addition to claim 1, Mumick discloses the claimed subject matter except the claimed joining the first tuple with at least a second tuple associated with a second one of the base relations in the second node.

As per claim 28, the limitations of claim 28 are rejected in the analysis of claim 1, and this claim is rejected on that basis.

As per claim 29, Mumick discloses, a method further comprising storing a second auxiliary relation containing one or more attributes of the second one of the base relation, the second auxiliary relation portioned according to a join attribute, (see col. 10, lines 37-45).

As per claim 30, Mumick discloses, wherein join of the first tuple with the second tuple in the second comprises joining with the first tuple with the second tuple contained in the second auxiliary relation, (see col. 8, lines 24-28).

As per claim 31, Mumick discloses, a method further comprising using a result of the join of the first tuple with the second tuple in the second auxiliary relation to update the materialized join view, (see col. 8, lines 35-36).

Art Unit: 2172

As per claim 32, Mumick discloses, a method further comprising maintaining an index on the auxiliary relation, (see col. 3, lines 20-52).

Allowable Subject Matter

5. Claims 41 and 42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

A. The prior art of record fails to teach or suggest in combination with other elements, the join view to store results of a join of the base relations based on a query containing a select clause and a join condition, the select clause specifying on or more attributes of the first base relation,

the controller to store the one or more attributes of the first base relation specified by the select clause in the first auxiliary relation, and the controller to not store other attributes of the first base relation not specified by the select clause in the first auxiliary relation as recited in claim 41.

The prior art of record fails to teach or suggest in combination with other elements, the join view to store results of a join of at least the first base relation and a second base relation based on a join condition including a first attribute of the first base relation and a second attribute of the second base relation, wherein the first attribute is a key of the first base relation and the second attribute is a foreign key of the second base relation that references the first attribute,

Art Unit: 2172

the controller to, in response to detecting that the first attribute is a key of the first base relation and that the second attribute is a foreign key on the second base relation that references the first attribute, create the first auxiliary relation to store the one or more tuples of the first base relation but to not create a second auxiliary relation to store tuples of the second base relation as recited in claim 42.

B. Claims 4, 7, 8 33, 16-19 and 43-50 are allowed.

The present application has been thoroughly reviewed. Upon extensive diverse databases searches, and a full review of applicant arguments, the examiner deems that the claimed features “receiving a first tuple into a base relation at a first node of a parallel database system having plural nodes, wherein the first tuple comprises a join attribute and the base relation is partitioned across the nodes according to an attribute different from the join attribute” in conjunction with other elements of the independent claims would not found anticipated or obvious over the prior art of record.

Art Unit: 2172

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Contact Information

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean B Fleurantin whose telephone number is 703-308-6718.


The examiner can normally be reached on 7:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, BREENE JOHN E can be reached on 703-305-9790. The fax phone number for the organization where this application or proceeding is assigned is 703-746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.


Jean Bolte Fleurantin

2004-01-22


SHAHID ALAM
PRIMARY EXAMINER